

Satiety signals from the gastrointestinal tract in health and obesity

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The vagal link between the gastrointestinal tract and the central nervous system has numerous vital functions for maintaining energy homeostasis and is attracting more and more attention due to the potential for exploiting peripheral humoral targets as treatments for conditions such as obesity. Whilst physiologically this system is well tuned and demonstrated to be effective in the regulation of both local function as well as promoting/terminating food intake the interface between the food consumed and initiation of vagal afferent satiety signals represents a susceptible pathway for disruption in various disease states. This is particularly true in obesity where there are observed changes at all levels including: 1) expression of specific nutrient receptors in enteroendocrine cells within the gut wall; 2) release of gastrointestinal hormones; and 3) the response of gastrointestinal vagal afferents to food related stimuli. Overall these changes promote food intake rather than the more desirable reduction in food intake. A more comprehensive understanding of the physiologic and pathologic mechanisms involved in vagal afferent satiety signalling will enable more effective pharmacotherapies and lifestyle strategies for the treatment of obesity.